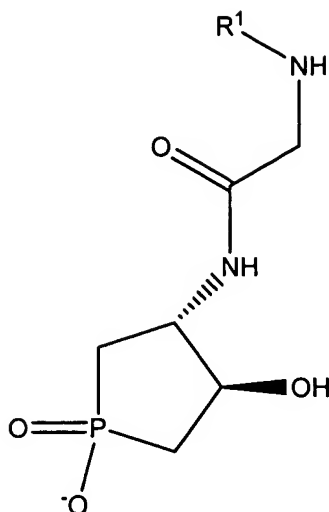


WHAT IS CLAIMED IS:

1. A compound having the formula:



wherein R<sub>1</sub> is a hydrogen atom, an amino protecting group, or a carrier molecule;

and the salts and esters thereof.

2. The compound of claim 1 wherein R<sub>1</sub> is a hydrogen atom.
3. The compound of claim 1 wherein R<sub>1</sub> is an amino protecting group.
4. The compound of claim 1 wherein R<sub>1</sub> is a carrier molecule.
5. A monoclonal catalytic antibody specific for a transition state analog of claim 1 that catalyzes the deamidation of asparagine to aspartic acid.
6. The monoclonal antibody of claim 5 that was raised against the transition state analog of claim 1 wherein R<sub>1</sub> is an immunoconjugate carrier molecule.
7. The monoclonal antibody of claim 5 wherein the antibody is murine.
8. The monoclonal antibody of claim 5 wherein the antibody is human.
9. The monoclonal antibody of claim 5, wherein the antibody is a human one of the IgG class.
10. The monoclonal antibody of claim 5, wherein the antibody is a human one of the IgG<sub>2</sub> class.
11. A pharmaceutical composition comprising a pharmaceutically acceptable amount of the monoclonal antibody of claim 5 and one or more pharmaceutically acceptable carriers therefor.

12. The pharmaceutical composition of claim 11, wherein the monoclonal antibody is murine.

13. The pharmaceutical composition of claim 11, wherein the monoclonal antibody is human.

14. The pharmaceutical composition of claim 11, wherein the monoclonal antibody is a human one of the IgG class.

15. The pharmaceutical composition of claim 11, wherein the monoclonal antibody is a human one of the IgG<sub>2</sub> class.

16. A method of treating cancer which comprises administering to a patient in need of such treatment a pharmaceutically effective amount of the pharmaceutical composition of claim 11.

17. The method of claim 16, where in the monoclonal antibody of the pharmaceutical composition is a murine one.

18. The method of claim 16, where in the monoclonal antibody of the pharmaceutical composition is a human one.

19. The method of claim 16, where in the monoclonal antibody of the pharmaceutical composition is a human one of the IgG class.

20. The method of claim 16, where in the monoclonal antibody of the pharmaceutical composition is a human one of the IgG<sub>2</sub> class.

21. The method of claim 16, wherein the cancer to be treated is a hematopoietic cancer.

22. The method of claim 16, wherein the cancer to be treated is acute lymphoblastic leukemia.

23. The method of claim 16, wherein the cancer to be treated is acute lymphoblastic leukemia.

24. The method of claim 16, wherein the cancer to be treated is chronic lymphocytic leukemia.

25. The method of claim 16, wherein the cancer to be treated is Hodgkin's disease.

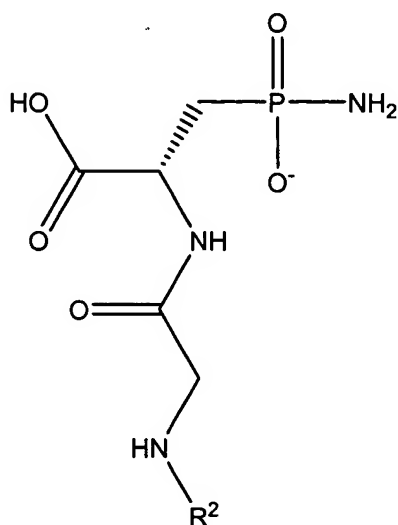
26. The method of claim 16, wherein the cancer to be treated is Non-Hodgkin's lymphoma.

27. The method of claim 16, wherein the cancer to be treated is multiple myeloma.

28. A method of catalyzing the deamidation of asparagine to aspartic acid comprising contacting asparagine-containing material with an antibody of claim 5.

29. A method of expressing an antibody of claim 5 that comprises immunizing a mouse with a compound of claim 1, forming a hybridoma from the spleen of the mouse so immunized, and isolating the antibody expressed from the hybridoma.

30. A compound having the formula:



wherein R<sub>2</sub> is a hydrogen atom, an amino protecting group, or a carrier molecule;

and the salts and esters thereof.

31. The compound of claim 30 wherein R<sub>2</sub> is a hydrogen atom.

32. The compound of claim 30 wherein R<sub>2</sub> is an amino protecting group.

33. The compound of claim 30 wherein R<sub>2</sub> is a carrier molecule.

34. A monoclonal catalytic antibody specific for a transition state analog of claim 30 that catalyzes the deamidation of asparagine to aspartic acid.

35. The monoclonal antibody of claim 34 that was raised against the transition state analog of claim 30 wherein R<sub>2</sub> is an immunoconjugate carrier molecule.

36. The monoclonal antibody of claim 34 wherein the antibody is murine.

37. The monoclonal antibody of claim 34 wherein the antibody is human.

38. The monoclonal antibody of claim 34, wherein the antibody is a human one of the IgG class.

39. The monoclonal antibody of claim 34, wherein the antibody is a human one of the IgG<sub>2</sub> class.

40. A pharmaceutical composition comprising a pharmaceutically acceptable amount of the monoclonal antibody of claim 34 and one or more pharmaceutically acceptable carriers therefor.

41. The pharmaceutical composition of claim 40, wherein the monoclonal antibody is murine.

42. The pharmaceutical composition of claim 40, wherein the monoclonal antibody is human.

43. The pharmaceutical composition of claim 40, wherein the monoclonal antibody is a human one of the IgG class.

44. The pharmaceutical composition of claim 40, wherein the monoclonal antibody is a human one of the IgG<sub>2</sub> class.

45. A method of treating cancer which comprises administering to a patient in need of such treatment a pharmaceutically effective amount of the pharmaceutical composition of claim 40.

46. The method of claim 45, where in the monoclonal antibody of the pharmaceutical composition is a murine one.

47. The method of claim 45, where in the monoclonal antibody of the pharmaceutical composition is a human one.

48. The method of claim 45, where in the monoclonal antibody of the pharmaceutical composition is a human one of the IgG class.

49. The method of claim 45, where in the monoclonal antibody of the pharmaceutical composition is a human one of the IgG<sub>2</sub> class.

50. The method of claim 45, wherein the cancer to be treated is a hematopoietic cancer.

51. The method of claim 45, wherein the cancer to be treated is acute lymphoblastic leukemia.

52. The method of claim 45, wherein the cancer to be treated is acute lymphoblastic leukemia.

53. The method of claim 45, wherein the cancer to be treated is chronic lymphocytic leukemia.

54. The method of claim 45, wherein the cancer to be treated is Hodgkin's disease.

55. The method of claim 45, wherein the cancer to be treated is Non-Hodgkin's lymphoma.

56. The method of claim 45, wherein the cancer to be treated is multiple myeloma.

57. A method of catalyzing the deamidation of asparagine to aspartic acid comprising contacting asparagine-containing material with an antibody of claim 34.

58. A method of expressing an antibody of claim 34 that comprises immunizing a mouse with a compound of claim 30, forming a hybridoma from the spleen of the mouse so immunized, and isolating the antibody expressed from the hybridoma.